

NON-PUBLIC?: N  
ACCESSION #: 8809280052  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Salem Generating Station - Unit 2 PAGE: 1 OF 3

DOCKET NUMBER: 05000311

TITLE: Hi-Hi S/G Turbine Trip/Rx. Trip Due to a Design/Equipment Problem  
(23BF19)

EVENT DATE: 08/31/88 LER #: 88-017-00 REPORT DATE: 09/20/88

OPERATING MODE: 1 POWER LEVEL: 072

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION  
50.73(a)(20(iv))

LICENSEE CONTACT FOR THIS LER:

NAME: M. J. Pollack - LER Coordinator TELEPHONE: 609-339-4022

COMPONENT FAILURE DESCRIPTION:

CAUSE: B SYSTEM: SJ COMPONENT: CPOS MANUFACTURER: B045  
REPORTABLE TO NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT: On 8/31/88 at 0553 hours, a Turbine Trip occurred as a result of No. 23 Steam Generator (SIG) High-High Level (67%). Following the Turbine Trip a Reactor Trip occurred due to the plant being above 10% power (Permissive P-7). The unit was in the process of a power coast down as the start of the fourth refueling outage approached. Prior to the event, the Nuclear Control Operator (NCO) received an alarm indicating that steam flow was significantly less than feed flow for No. 23 S/G. Feed flow was at 100% with steam flow at 70%. The NCO attempted to manually close the 23BF19 valve (Feedwater Control Valve), however, the valve could not be closed resulting in the SIG level rising to the Turbine Trip setpoint. The apparent cause of this occurrence has been attributed to a design/equipment problem associated with the 23BF19 valve. Investigation of the 23BF19 valve revealed that its positioner linkage had disconnected due to vibration. The linkage had pulled itself away from the lower turn buckle as evidenced by the damaged rod threads. Since the Unit was very near the end of its fuel cycle, the scheduled fourth refueling outage was initiated. The "star" type lockwasher will be replaced with an "overlap" type lockwasher for all BF19 and BF40 valves. Also, "locktight" will be applied to the rod threads. The preventive maintenance requirements for the BF19 valves will be modified to require inspection of the turnbuckles and tightness of the rod nuts every 18

months.

End of Abstract

TEXT PAGE 2 OF 3

#### PLANT AND SYSTEM IDENTIFICATION:

Westinghouse - Pressurized Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as XX!

#### IDENTIFICATION OF OCCURRENCE:

Hi-Hi Steam Generator Turbine Trip/Reactor Trip Due To A Design/Equipment Problem Associated With the 23BF19 Feedwater Valve

Event Date: 8/31/88

Report Date: 9/20/88

This report was initiated by Incident Report No. 88-383.

#### CONDITIONS PRIOR TO OCCURRENCE:

Mode 1 Reactor Power 72% - Unit Load 760 Mwe

#### DESCRIPTION OF OCCURRENCE:

On August 31, 1988 at 0553 hours, a Turbine Trip occurred as a result of No. 23 Steam Generator (S/G) High-High Level (67%). Following the Turbine Trip a Reactor Trip occurred due to the plant being above 10% power (Permissive P-7). The unit was in the process of a power coast down as the start of the fourth refueling outage approached.

Prior to the event, the Nuclear Control Operator (NCO) received an alarm indicating that steam flow was significantly less than feed flow for No. 23 SIG SB!. Feed flow was at 100% with steam flow at 70%. The NCO attempted to manually close the 23BF19 valve (Feedwater Control Valve) SJ! however, the valve could not be closed resulting in the SIG level rising to the Turbine Trip setpoint.

The Unit was stabilized in Mode 3 (Hot Standby). At 0616 hours the same day, in accordance with the requirements of the Code of Federal Regulations 10CFR 50.72 (b) (2) (ii), the Nuclear Regulatory Commission was notified of the automatic

actuation of the Reactor Protection System JC!.

#### APPARENT CAUSE OF OCCURRENCE:

The apparent cause of this occurrence has been attributed to a design/equipment problem associated with the 23BF19 valve. Investigation of the 23BF19 valve revealed that its positioner linkage had disconnected due to vibration. The linkage had pulled itself away from the lower turn buckle as evidenced by the damaged rod threads.

#### ANALYSIS OF OCCURRENCE:

The Turbine Trip on SIG high-high level is an anticipatory trip to

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#### ANALYSIS OF OCCURRENCE: (cont'd)

prevent moisture carryover from the SIG and damage to the main turbine due to excessive moisture carryover. The purpose of the reactor trip is to reduce the primary plant transient resulting from the loss of the turbine above 10% power. A turbine trip above 10% power results in a direct reactor trip and a controlled short term release of steam to the condenser via the steam dump. This steam release removes sensible heat from the reactor coolant system and precludes SIG safety valve operation.

The Reactor Trip after a Turbine Trip with the Unit above 10% power is anticipatory and is included as part of good engineering practice and prudent design. No credit is taken in any of the safety analysis for this trip. For rapid temperature transients during power operation, protection of the reactor is provided by the Main Steam safety valves. For slower developing transients, protection of the reactor is provided by atmospheric relief valves, condenser steam dump, and overtemperature delta temperature bistables.

This occurrence involved no undue risk to the health and safety of the public. However, because of the automatic actuation of the reactor protection system, the event is reportable in accordance with the Code of Federal Regulations 10CFR 50.73 (a) (2) (iv).

Since the Unit was very near the end of its fuel cycle, the scheduled fourth refueling outage was initiated.

#### CORRECTIVE ACTION:

The "star" type lockwasher, used to prohibit loosening of the rod, will be replaced with an "overlap" type lockwasher for all BF19 valves and all BF40 valves (Feedwater Control Bypass Valve). Additionally, "locktight" will be

applied to the rod threads. These modifications should prevent recurrence of this event. The Salem Unit 1 BF19 and BF40 valve positioner linkages have been modified.

The preventive maintenance requirements for the BF19 valves will be modified to require inspection of the turnbuckles and tightness of the rod nuts every 18 months.

The replacement of the star type washer with overlap washers was originally scheduled to be performed during the Unit 2 fourth refueling outage and any Unit 1 outage of sufficient duration. The work was scheduled in response to a review of an INPO Network item (reference OE 1846 FARLEY, 08-JAN-87, "Loss of a Valve Positioner Feedback Linkage") addressing this issue.

General Manager - Salem Operations

MJP:pc  
SORC Mtg. 88-078

ATTACHMENT 1 TO 8809280052 PAGE 1 OF 1

PSEG

Public Service Electric and Gas Company  
P.O. Box E  
Hancocks Bridge, New Jersey 08038  
Salem Generating Station

September 20, 1988

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

Dear Sir:

SALEM GENERATING STATION  
LICENSE NO. DPR-75  
DOCKET NO. 50-311  
UNIT NO. 2  
LICENSEE EVENT REPORT 88-017-00

This Licensee Event Report is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR 50.73 (a) (2) (iv). This report is required within thirty days of discovery.

Sincerely yours,  
L. K. Miller  
General Manager-  
Salem Operations

MJP:pc

Distribution

The Energy People

ACCESSION #: 8809280056

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